

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>13827WO</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE 2003/001456</b>	International filing date (day/month/year) <b>17.09.2003</b>	Priority date (day/month/year) <b>20.09.2002</b>
International Patent Classification (IPC) or national classification and IPC <b>H01M 8/02</b>		
Applicant <b>Volvo Technology Corporation et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand <b>19.03.2004</b>	Date of completion of this report <b>15.12.2004</b>
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer  <b>Lars Hennix/MP</b> Telephone No. +46 8 782 25 00

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs: \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs: \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>6, 10-23, 25-28</u>	YES
	Claims	<u>1-5, 7-9, 24, 29</u>	NO
Inventive step (IS)	Claims	<u>6, 10-23, 25-28</u>	YES
	Claims	<u>1-5, 7-9, 24, 29</u>	NO
Industrial applicability (IA)	Claims	<u>1-29</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

The following documents were cited in the International Search Report:

D1: US6296964 B1  
D2: JP10233221 A1  
D3: EP0495512 A1  
D4: WO9742672 A1  
D5: WO02069424 A1  
D6: WO0161777 A2  
D7: WO9957781 A1

## Claims 1 and 29

D1 describes a fuel cell in the form of a surface membrane electrode assembly (30) comprising an anode (22) and a cathode (26) on opposite sides of the electrolyte. A "distribution arrangement" (14) is arranged to distribute an incoming fluid flow to the active surface (22), (26) over an "inlet region" corresponding to the rows of holes (12). The "inlet region" extends along the active surface. In the same manner in D2, the lower half of the separator correspond to the "collecting arrangement" in claim 1 and the references (13), (15) to the "inlet region" extending along the active surface.

D1 and D2, further show fuel cell stacks assembled from a plurality of the fuel cells described above (D1, figure 4, column 4, lines 30-47, D2, figure 5 and 6).

Consequently, the fuel cell according to claim 1 and the fuel cell stack according to claim 29 lack novelty.

.../...

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

Claims 2-5, 7-9, 24

The fuel cell according to claims 2-5, 7-9, 24 is also not novel in view of D1 and D2. D1 and D2 show for example that the inlet region extends along at least half of the extent of the active surface in the lateral or vertical direction and that it is located adjacent to one of the delimitations of the active surface.

Moreover, D2 shows how the flow ducts comprise a "collection arrangement" i.e. the upper half of the separator which allows a flow outgoing from the active surface to leave said active surface within an "outlet region" (14) and (16) extending along the active surface. The outlet region is located adjacent to a delimitation of the active surface opposite the inlet region.

The distribution arrangement, which corresponds to the lower half of the separator according to D2, comprises a distribution chamber (13) which extends in the direction along the active surface, and one inlet opening (15) which allows conveying-in of fluid from the distribution chamber to the active surface. The distribution chamber (13) is designed to provide a greater flow resistance than the inlet opening (15). The active surface extends essentially in a first plane and the distribution chamber (13) essentially in a second plane, parallel with the first plane.

Further, the distribution chamber is located "at a distance" from the first plane, and it extends at least partly over an area, which in the first plane corresponds to the active surface.

In the same manner, the collection arrangement, which corresponds to the upper half of the separator in D2, comprises a collecting chamber (14) extending in a direction along the active surface, and an outlet opening (16) which allows conveying-out of said flow from the active surface to the collecting chamber.

Consequently, the fuel cell according to claims 2-5, 7-9 and 24 lacks novelty.

D3-D7 further describes the prior art.

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 13 is not clear and concise, the claim states that "the at least one further layer (31), (41) comprises a third layer (31) and a fourth layer (41)". The claim can be interpreted as if the further layer comprises it self.